

In re Patent Application of:  
**STORM ET AL.**  
Serial No. **10/820,464**  
Filed: **APRIL 8, 2004**  
Confirmation No. **7257**

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**REMARKS**

Applicants would like to thank the Examiner for the thorough examination of the present application.

The independent claims have been amended to remove the recitation "with the linear output signal being selected when greater than a predetermined value". The Applicants submit that the independent claims as amended overcome the 35 U.S.C. §112 rejections.

The claim amendments and the arguments supporting patentability of the claims are provided below.

**I. The Amended Claims**

The present invention, as recited in amended independent Claim 14, for example, is directed to an image sensor comprising an array of pixels, each pixel comprising a photodiode, and first and second output circuits. The first output circuit derives a linear output signal by applying a reset signal to the photodiode, and reads a voltage on the photodiode after an integration time. The second output circuit derives a logarithmic output signal by reading a near instantaneous illumination-dependent voltage on the photodiode that is a logarithmic function of the illumination. The first and second output circuits sequentially provide the linear and logarithmic output signals. An output selection circuit selects between the linear output signal and the logarithmic output signal as an output signal.

Amended independent Claim 21 is directed to an image sensor, and has been amended similar to independent Claim 14.

Amended independent Claim 31 is directed to a method for operating an image sensor, and has been amended is similar to

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independent Claim 14.

## **II. The Claims Are Patentable**

The Examiner rejected independent Claims 14, 21 and 31 over the article by Tu et al., titled "CMOS Active Pixel Image Sensor With Combined Linear And Logarithmic Mode Operation" in view of the Serizawa et al. patent.

The Examiner cited Tu et al. as disclosed the claimed invention except for the first and second output circuits sequentially providing the linear and logarithmic outputs. The Examiner cited Serizawa et al. as disclosing this feature of the claimed invention.

In particular, the Examiner references column 8, lines 12-22 of Serizawa et al. as disclosing linear and logarithmic outputs. However, column 8, lines 12-12 of Serizawa et al. provides the following:

"FIG. 1 is a block diagram of an imaging apparatus of a first embodiment. An imager **1010** receives an optical image thereon through a lens unit **10** and alternatively generating a long exposure video signal with a first exposure interval and a short interval exposed video signal with a second exposure interval substantially at the same time (at slightly different timings, i.e., consecutive two frames) under control by a driving circuit **1020**. The second exposure interval is shorter than the first exposure interval. The long exposure video signal and the short exposure video signal respectively have first and second effective detection ranges **11** and **12**."

In the above reference from Serizawa et al., there is no mention of a logarithmic output. Moreover, logarithmic is not even mentioned anywhere in Serizawa et al. The Serizawa et al.

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patent discloses linear and non-linear outputs, but fails to disclose that the non-linear output is a logarithmic output.

Accordingly, it is submitted that amended independent Claim 14 is patentable over the Tu et al. article in view of the Serizawa et al. patent. Amended independent Claims 21 and 31 are similar to amended independent Claim 14. Therefore, it is submitted that these claims are also patentable over the Tu et al. article in view of the Serizawa et al. patent.

In view of the patentability of amended independent Claims 14, 21 and 31, it is submitted that the dependent claims, which include yet further distinguishing features of the invention are also patentable. These dependent claims need no further discussion herein.

### **III. CONCLUSION**

In view of the amendments to the claims and the arguments provided herein, it is submitted that all the claims are patentable. Accordingly, a Notice of Allowance is requested in due course. Should any minor informalities need to be addressed, the Examiner is encouraged to contact the undersigned attorney at the telephone number listed below.

Respectfully submitted,

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